Introduction: The purpose of this study is to verify de-proteinization of the enamel surface with two different concentrations of papain solution 8% and 10% before acid etching with 37% phosphoric acid which increases the shear bond strength of brackets using two adhesives- Transbond XT and Fuji Ortho LC, a Resin Modified Glass Ionomer Cement.

Material and Methods: A total of 90 samples were prepared for the study. The 6 groups were Group I- The enamel was etched with 37 % phosphoric acid and bonded with Transbond XT, Group II- Deproteinisation with 8% papain, etching with 37% phosphoric acid and bonded with Transbond XT, Group III- Deproteinisation with 10% papain, etching with 37% phosphoric acid and bonded with Transbond XT and Group IV- Etching with 37% phosphoric acid and bonded with Fuji Ortho LC, Group V- Deproteinisation with 8% papain, etching with 37% phosphoric acid and bonded with Fuji ORTHO LC, Group VI- Deproteinisation with 10% papain, etching with 37% phosphoric acid and bonded with Fuji Ortho LC. All groups have 15 teeth for shear bond strength testing. SEM evaluation were done on normal enamel, 37% phosphoric acid etched enamel, deproteinisation with 8% papain followed by 37% phosphoric acid etching and deproteinisation with 10% papain followed by 37% phosphoric acid etching. The shear bond strength was tested with a Universal testing device (INSTRON model-3345). The force required to shear the bracket was recorded, and the bond strengths were calculated in megapascals (MPa). The results were statistically analyzed to know the significance of difference between the groups.

Results: Statistical analysis of the data indicates that, there are significant differences between shear bond strength obtained with deproteinisation with 10% papain and without deproteinisation with both Transbond XT and Fuji Ortho LC. That is with Group I and Group III, with Group IV and Group VI. There is increase in the shear bond strength with deproteinisation with 8% papain with both Transbond XT and Fuji Ortho LC, but the values are not statistically significant.

Conclusion: From this study the following conclusions were made; 10% deproteinisation with papain before acid etching shows statistically significant increase in the shear bond strength values with both Transbond XT and Fuji Ortho LC when compared with the groups without deproteinisation . Therefore deproteinisation with 10% papain and bonding with Fuji Ortho LC can be routinely used as an alternative to Transbond XT inorder to prevent White spot lesions.

Key words: Shear Bond Strength, Papain, Fuji Ortho LC